FIGS. 15-16 illustrate test results demonstrating the surprising practicality and effectiveness of ultra-smooth surfaces. These tests were conducted in a tow tank environment with the marine element towed to develop relative motion between the test subject and the water. FIG. 15 illustrates transverse root-mean-square (RMS) displacement as a function of the Reynolds number for an ultra-smooth cylinder and for relatively rough cylinders representing marine elements. FIG. 16 illustrates drag coefficient as a function of Reynolds number for the same samples. The dimensionless roughness parameter K/D for these samples were:

C1

In the Claims

Please amend the claims 2, 3, 5 and 6 to read as follows:

2. A method of controlling drag and vortex induced vibration about a substantially cylindrical marine element by providing an ultra-smooth surface coating about the cylindrical element having a K/D ratio of $1.0 \times 10^{-4}$ or less where:

K is an average measured surface peak to trough peak distance; and

D is an effective outside diameter of the cylindrical element including the coating.

C2

3. A method of controlling drag and vortex induced vibration about a substantially cylindrical marine element by providing an ultra-smooth surface substantially cylindrical sleeve about the cylindrical element having a K/D ratio of $1.0 \times 10^{-4}$ or less where:

K is an average measured surface peak to trough peak distance; and

D is an effective outside diameter of the cylindrical element, including the sleeve.

5. A system for controlling drag and vortex induced vibration comprised of a substantially cylindrical marine element having an ultra-smooth coating material with a K/D roughness parameter of $1.0 \times 10^{-4}$ or less where:

K is an average measured surface peak to trough peak distance; and

D is an effective outside diameter of the cylindrical element including the coating.

C3

6. A system for controlling drag and vortex induced vibration comprised of a substantially cylindrical marine element having an ultra-smooth substantially cylindrical sleeve surrounding the marine element with a K/D roughness parameter of $1.0 \times 10^{-4}$ or less where:

K is an average measured surface peak to trough peak distance; and

D is an effective outside diameter of the cylindrical element including the cylindrical sleeve.